

REMARKS

Claims 1-19 were examined in the Office Action dated April 3, 2006.

Claim 2 was objected to for informalities.

Claims 1, 3-15, and 17-19 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 6,232,706 to Dai *et al.* (Dai) in view of U.S. Patent Application Publication 2002/0036452 to Muroyama *et al.* (Muroyama).

Claim 2 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Dai and in view of Muroyama and U.S. Patent No. 5,863,601 to Kikuchi *et al.* (Kikuchi).

Claim 16 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Dai and in view of Muroyam and U.S. Patent No. 4,650,895 to Kadokura *et al.* (Kadokura).

SUPPORT FOR AMENDMENTS

The specification has been amended to recite that Figure 1 shows that in step **210**, a masked substrate is provided; in step **220**, a metalorganic layer is deposited; in step **230**, the deposition mask is removed; in step **240**, the metalorganic layer is oxidized; and in step **250**, the one-dimensional carbon nanostructures are synthesized. The amendment defines reference numbers 210, 220, 230, 240, and 250 in Figure 1 in the specification. The amendment finds support in Figure 1 as originally filed.

Claim 2 has been amended to recite “metalorganic” instead of “metalorgnic.” The amendment corrects for a typographical error.

Claim 10 has been amended to depend from claim 1 instead of claim 9.

Claims 20-42 have been canceled without prejudice. Applicants reserve the right to pursue the canceled subject matter in one or more related divisional, continuation, or continuation-in-part applications.

Accordingly, no new matter has been added by way of this amendment and the entry thereof is respectfully requested.

EXAMINER INTERVIEW SUMMARY UNDER 37 CFR § 1.133(b)

Applicants' representative Narinder Banait conducted an Examiner Interview with Examiner Kelly Stouffer on June 11, 2007. This Interview Summary is submitted pursuant to 37 CFR § 1.133(b) and includes the substance of the interview between Applicants' representatives and Examiner.

Applicants thank the Examiner for contacting their representative and for her time in conducting the telephone interview. During the telephone interview, Applicants' attorney and the Examiner discussed a proposed amendment to claim 1 to overcome the rejection of claims 1, 3-15, and 17-19 under 35 U.S.C. § 103(a) over U.S. Patent No. 6,232,706 to Dai *et al.* in view of U.S. Patent Application Publication 2002/0036452 to Muroyama *et al.* The amendment recited the limitation of using a metal oxide as the deposition mask. The Examiner stated that amendment would not overcome the disclosure of paragraphs 96 and 148 of Muroyama. An agreement was not reached during the interview.

Addressing the Examiner's Rejections

Rejections of the Claims Under 35 U.S.C. §103(a)

(a) The Examiner rejected claims 1, 3-15, and 17-19 under 35 U.S.C. §103(a) as allegedly being unpatentable over Dai in view of Muroyama.

The applicant traverses the rejection as the Office has not established a *prima facie* case of obviousness for which three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations. The teachings or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claim 1 recites depositing a metalorganic layer on the substrate and oxidizing the portion of the metalorganic layer deposited on an unmasked portion of the substrate to form a growth catalyst on the substrate. Dai and Muroyama, alone or in combination, do not disclose oxidizing the metalorganic layer to form a growth catalyst.

Dai discloses depositing an iron layer on a substrate and oxidizing the iron layer to form a growth catalyst. Dai does not disclose substituting iron layer with a metalorganic layer.

Muroyama also discloses using a metal or a metal thin layer as a catalyst. In addition, Muroyama discloses using an organometallic compound in paragraph 99 where the metal can be zinc (Zn), tin (Sn), aluminum (Al), lead (Pb), nickel (Ni) or cobalt (Co), and the ligand can be acetylacetone, hexafluoroacetylacetone, dipivaloylmethane or cyclopentadienyl.

Muroyama, however, does not disclose oxidizing the metal, metal thin layer or the organometallic compound to form the growth catalyst as claimed in claim 1 by the applicants. In fact, Muroyama at paragraph 95 states that “it is preferred to remove a metal oxide (so-called natural oxide film) on the surface of each metal particle or on the surface of the metal thin layer or the organometallic compound thin layer.” Muroyama thus teaches away from combining it with Dai.

In Examples 11 and 12, Muroyama disclose the use of nickel acetylacetonate as the catalyst. In paragraphs 268 and 276, Muroyama states “after the organometallic compound thin layer is formed, the metal oxide (natural oxide film) on the surface of the organometallic compound thin layer may be also removed in the same manner as in [Step-720] in Example 7.”

Dai discloses depositing an iron layer on a substrate and oxidizing the iron layer to form a growth catalyst. Muroyama discloses removing the metal oxide from the surface of the metal particles that act as a growth catalyst. While Muroyama teaches the use of certain organometallic compounds as catalysts, it teaches away from oxidizing the organometallic layer to form a growth catalyst on the substrate. Thus, one of skill in the art would not combine Dai with Muroyama.

The combination of Dai and Muroyama does not disclose all the elements of the independent claim 1. The Examiner is therefore respectfully requested to withdraw the rejection.

(b) The Examiner rejected claim 2 under 35 U.S.C. §103(a) as allegedly being unpatentable over Dai in view of Muroyama and Kikuchi. The applicants traverse the rejection. Claim 2 depends from claim 1 and thus contains all the elements of claim 1. The combination of Dai, Muroyama and Kikuchi does not disclose depositing a metalorganic layer on the substrate and oxidizing the portion of the metalorganic layer deposited on an unmasked portion of the

substrate to form a growth catalyst on the substrate. Since the combination of the references do not disclose all the element of the claim, the Examiner is respectfully requested to withdraw the rejection.

(c) The Examiner rejected claim 16 under 35 U.S.C. §103(a) as allegedly being unpatentable over Dai in view of Muroyama and Kadokura. The applicants traverse the rejection. Claim 16 depends from claim 1 and thus contains all the elements of claim 1. The combination of Dai, Muroyama and Kadokura does not disclose depositing a metalorganic layer on the substrate and oxidizing the portion of the metalorganic layer deposited on an unmasked portion of the substrate to form a growth catalyst on the substrate. Since the combination of the references do not disclose all the element of the claim, the Examiner is respectfully requested to withdraw the rejection.

Addressing the Examiner's Objections

The Examiner objected to claim 2 because "metalorganic" was incorrectly spelled. Claim 2 has been amended to correct the spelling. The Examiner is respectfully requested to withdraw the objection.

The Examiner objected to the specification because reference numbers 210, 220, 230, 240, and 250 in Figure 1 were not defined in the specification. The specification has been amended, and the Examiner is respectfully requested to withdraw the objection.

CONCLUSION

The claims pertain to patentable subject matter, and a notice of allowance is earnestly solicited. If the Examiner has any questions concerning this Response, the Examiner is invited to telephone Applicants' representative at (650) 335-7818.

Respectfully submitted,
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